REMARKS/ARGUMENTS

The Applicant respectfully requests further examination and reconsideration in view of the comments set forth fully below. Claims 1-3, 5, 8, 9, and 37-39 were pending. Within the Office Action, Claims 1-3, 8, 9, and 37-38 have been rejected. Accordingly, Claims 1-3, 5, 8, 9, and 37-39 are now pending in the application.

Rejections Under 35 U.S.C. § 103:

Within the Office action, Claims 1-3, 8, 9, and 37-39 have been rejected as being unpatentable over US Patent Application No. 2004/0116096 to Shen (Hereinafter Shen) in view of US Patent No. 5,543,756 to Anderson (Hereinafter Anderson) and in view of US Patent No. 7,034,660 to Watters (Hereinafter Watters).

Shen teaches an RF communications receiver which permits greater integration on standard silicon chips and consumes less power than previous receivers. Also, Shen teaches a new method for using a tracking polyphase filter for image rejection of variable intermediate frequencies, wherein the method allows for reduce sensitivity to resistor and capacitor manufacturing variations and allows for the polyphase filter response to be enhanced compared to the prior art. [Shen, Abstract]

Anderson teaches a circuit for an intermediate frequency filter combines a variable bandwidth series resonant filter circuit and a parallel resonant filter circuit. A variable output impedance drives the filter and a variable input impedance amplifier buffers the output of the filter. The output impedance of the driver is made to track the input impedance of the output buffer. Changes in the gain of the filter with respect to bandwidth are relatively small. The noise figure of the filter remains low. The circuit is not operated in the non-linear region of the crystal because relatively low drive currents are needed at narrow bandwidths so that the crystal is not overdriven. The LC filter tunes out the stray capacitance from the load of the crystal filter. [Anderson, Abstract]

Watters teaches devices for structural health monitoring including wireless interrogation systems and methods that rely on a complementary sensing device and interrogator. The sensing device is disposed to measure a parameter indicative of the health of a structure. A sensor reading from the sensor indicates the level of a parameter being monitored or whether one or more particular physical or chemical events have taken place. Using wireless techniques, the interrogator probes the device to determine its identity and its current sensor reading. This often includes transmission of a wireless signal through portions of the structure. When activated, the device responds with a wireless signal that identifies the device and contains information about

the parameter being measured or a particular sensor state corresponding to the parameter. The identity of the device allows it to be distinguished from a number of similar devices. Thus this invention finds particular usefulness in the context of an array of devices that can be probed by a wireless interrogation unit. [Watters, Abstract]

Claims 1-3, 5 and 39

Neither Shen, Andersen, Watters, or their combination teach a filter for use in an integrated circuit comprising a plurality of data storage locations programmable through a serial control interface.

The instant Claim 1 is directed towards an intermediate frequency filter for use in an integrated circuit, comprising a first filter stage, the first filter stage including a first LC resonator, and the first filter stage further including a first adjustable capacitor array coupled to the first LC resonator, the first adjustable capacitor array having an effective capacitance value adjustable through use of a first plurality of programmable data storage locations, the first plurality of programmable data storage locations programmable through a serial control interface. As discussed above, neither Shen or Andersen or their combination teach a plurality of programmable data storage locations. Within the office action dated May 26, the Examiner points to paragraphs 0028 and 0029 of Shen to show a plurality of data storage locations programmable through a serial control interface. Paragraphs 0028 and 0029 read:

> "FIG. 5 is a possible implementation of the switched capacitor array. Terminals 109 and 110 are connected to a binary-weighted switched capacitor array. Capacitors 111-113 are connected to switches 114-117, which can be programmed by digital control." [Shen, 0028]
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> [0029] FIG. 6 gives another possible implementation of the tracking polyphase filter, 80, in a form that can be implemented with on-chip tunable resistors, 120-123, and fixed capacitors, 124-127. There are many ways of generating a variable resistor array, including binary-weighted parallel resistors or linearly-weighted parallel resistors. In addition, binary or linearly weighted series resistors can also be used. An analog control voltage can be used to adjust a MOS device in the triode region for continuous control. The control signals for the resistor array can be generated by the tuning circuit, 128. There are many known ways in the art to generate a circuit to tune the R-C values, such as a phase-locked loop. The voltage inputs, 81-84, of the tracking polyphase filter, 80, are filtered to produce voltage outputs, 86-88.
>
> "FIG. 7 is a possible implementation of a parallel switched resistor array. Terminals 130

> and 131 are connected to a binary-weighted switched resistor array. Resistors 132-134 are connected to switches 135-138, which can be programmed by digital control." [Sen, 0030]

Also within the office action of May 26, the Examiner makes a conclusory statement that capacitor array wherein the values can be programmed by digital control through a binary weighted switch as taught by Shen, taken in its broadest interpretation, meets the claim limitation of data storage locations. However, Claim 1 already comprises a variable capacitor array and a digital interface (serial interface). Therefore, the data storage locations by definition are a separate element. There is no mention of a plurality of programmable data storage locations anywhere within Shen. Mere digital control of a programmable capacitor bank cannot be equated with a data storage location. Data storage, by its vary nature, implies that there must be some memory device. There is no such teaching, disclosure, or suggestion within Shen.

It is well settled that to establish a *prima facie* case of obviousness, three basic criteria must be met:

1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
2) there must be a reasonable expectation of success; and
3) the prior art reference, or references, must teach or suggest all the claim limitations. MPEP § 2143.

The burden of establishing a *prima facie* case of obviousness based on the teachings of Shen, Anderson and Watters has not been met within the Office Action. As discussed above, neither Shen, Anderson and Watters nor their combination teach a plurality of data storage locations. As a result, Claim 1 is allowable over the combination of Shen and Anderson. Claims 2, 3, 37 and 38 are dependent upon the allowable Claim 1, and are therefore also allowable.

Claims 8 and 9

The instant Claim 8 is directed towards a circuit formed as part of a single integrated circuit, having a first filter stage further including a first adjustable capacitor array having an effective capacitance value adjustable through use of a first plurality of fuses, the first plurality of fuses programmable through the serial control module. The fuse taught by Watters is not formed as a part of a single integrated circuit. As seen in Figures 3D and 3E, the fuse is explicitly external to the integrated circuit. Furthermore, the fuses of Watters are not programmable through a serial control interface:

> "A sensor device of the present invention may respond with a quantitative indication of the parameter or with a specific state of the sensor. For example, a fuse may be used to measure corrosion of a surrogate thin wire that parallels corrosion of a metal element in a structure. If the wire corrodes and breaks, the wire failure event is detected by a state change of the fuse. The failure event may then be used to signal significant corrosion in the metal." [Watters, Col. 16 Lines 4-12, emphasis added]

From the excerpt above, it is clear that Watters does not teach a fuse that is controllable by any kind of user input, such as a serial interface. Within the Office Action of May 26, the examiner states that Watters discloses an integrated circuit that adjusts capacitance values by use of a fuse. However, Watters depends on external conditions, such as corrosion, to break the fuse thereby causing a change from a 1 to a 0 or vice versa for use in detecting structural damage to a large structure as explained in the exerpt below:

> "In a simple form, the physical or chemical event is recorded by changing a "1" to a "0" or vice versa. The information recorded (whether a single bit, multiple bits, or some other information) when the event occurs can be used in two ways." [Watters, Col. 13, Lines 13-14]

The instant Claim 8 is directed toward fuses that are programmable by a serial control interface. The person of ordinary skill in the art of integrated circuits would have no motivation or suggestion to find Watters and combine it with Shen and Andersen, since Watters is primarily concerned with sensing corrosion by use of a fuse and a bank of capacitors and does not relate to the design of filters or generating desired frequencies.:

> The sensor device 180 of FIG. 3D communicates information related to a parameter being monitored based on a frequency shift. System 180 comprises a microchip 182, resonating capacitors 183 and 184, fuse 185, and antenna 186. Resonating capacitors 183 and 184 are disposed in parallel and used to establish resonant frequency sufficiently far apart from each other. If fuse 185 is closed, the sensor device achieves its maximum response at one frequency. When fuse 185 is open, its maximum response is a different frequency. This allows sensor state system 180 to provide binary feedback pertaining to whether a particular threshold for a parameter being measured has been met." [Watters, Col. 16, Lines 15-26]

Receiving feedback relating to a change in frequency is not the same as causing a desired change in frequency by adjusting fuses. As a result, there is no motivation or suggestion to combine Shen, Andersen and Watters to arrive at the current invention, since Watters deals with reacting to a change in frequency caused by change in the state of a fuse, rather than a user intentionally setting a plurality of fuses for causing a change in resonant frequency.

Furthermore, If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. [MPEP 2143.01] The combination of Watters and Shen would render Shen inoperable. The fuses of Watters are set once and only once, and a system is configured to react to the change caused by the fuses changing states. Shen teaches a tunable capacitor banks, and fuses cannot be used to tune anything. Rather, they will set one condition when they are open and another condition when they are closed.

> "The mixer outputs are differential in-phase signals 83 and 84 and differential quadrature signals 81 and 82 that are frequency translated to a variable intermediate frequency. The mixer outputs, 81, 82, 83 and 84, are inputs into a tracking polyphase filter, 80. The tracking polyphase filter, 80, response is tunable to the variable intermediate frequency and is also calibrated against resistor and capacitor variations through a tuning circuit, 116." [Shen, 0024, Figures 4 and 5]

Conclusion

The combination of Shen, Andersen and Watters does not teach every element of Claim 8. Specifically, there is no teaching of an integrated circuit having fuses that are programmable or settable by a serial interface. Furthermore, there is no motivation to combine Andersen, Shen and Watters. The system taught by Watters relates to reacting to a change in a resonant frequency of a capacitor bank, not generating desired frequencies by manipulation of a fuses by a serial interface. Also, the combination of Shen and Watters renders Shen inoperable because Shen requires tuneable capacitor arrays by use of variable resistors or the like whereas fuses can only be set once.

Therefore, the Applicant respectfully argues that Claim 8 was not unpatentable as obvious over the combination of Shen, Anderson and Watters. Claim 9 is dependent on the allowable Claim 8, and is therefore also allowable.

The applicants respectfully submit that the above claims are in a condition for allowance, and allowance at an early date would be appreciated. If the Examiner has any questions or comments, the Examiner is encouraged to call the undersigned at (408) 530-9700 to discuss them so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
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